



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
21.08.2002 Bulletin 2002/34

(51) Int Cl.7: **F16H 37/08**

(43) Date of publication A2:
20.12.2000 Bulletin 2000/51

(21) Application number: **00108291.6**

(22) Date of filing: **14.04.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Schmidt, Michael Roland
Carmel, IN 46033 (US)**

(74) Representative:
**Manitz, Finsterwald & Partner GbR
Postfach 31 02 20
80102 München (DE)**

(30) Priority: **14.06.1999 US 332400**

(71) Applicant: **General Motors Corporation
Detroit, Michigan 48265-3000 (US)**

(54) **Multiple range continuously variable transmission**

(57) A powertrain has an engine (12), multi-range transmission (10,16) and a final drive gearing (14). The transmission includes an input planetary gear set (10), the carrier of which is driven by the engine, for providing a power split between the sun gear and the ring gear. The sun gear and ring gear both are connected with respective transfer gear members. The gear members are connected to respective members of a continuously variable transmission unit (CVU) (16) and to selectively en-

gageable clutch mechanisms. The clutch mechanisms (34,42,66) provide selective drive connections with an output transfer gear mechanism that is drivingly connected with the final drive gearing. The CVU is controlled to establish a variable drive ratio between the transfer gear members connected with the sun gear and the ring gear. Range changes in the powertrain occur at synchronous points of operation in the CVU in a manner to provide three forward ranges and a reverse range.

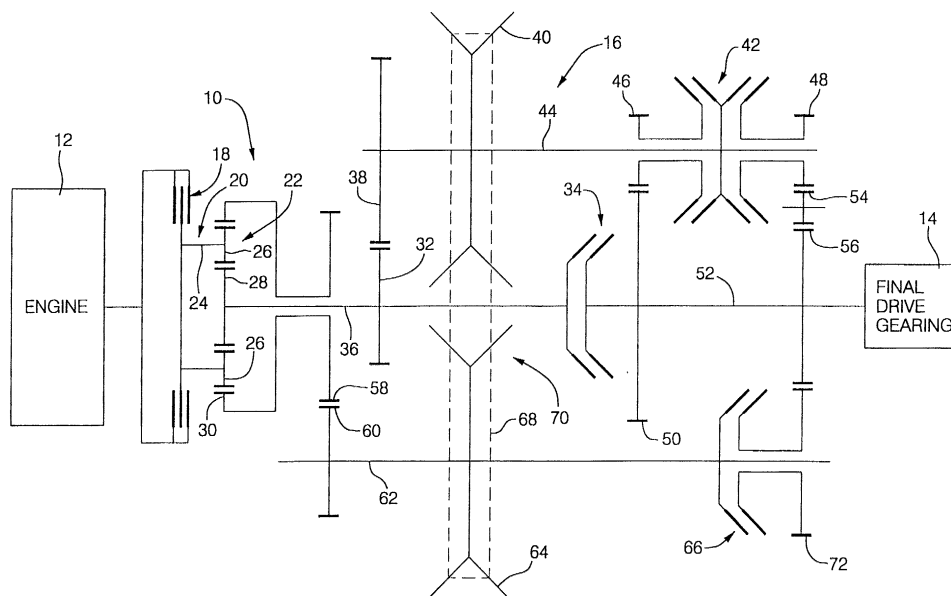


FIG. 1



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 10 8291

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	WO 94 15121 A (MOELLER FRANK ;BAMFORD EXCAVATORS LTD (GB); HICKS RAYMOND JOHN (GB) 7 July 1994 (1994-07-07) * page 6, paragraph 1 - page 8, paragraph 3 * * figures 1-3A *	1,2,6	F16H37/08
Y	DE 37 03 245 A (VOLKSWAGENWERK AG) 27 August 1987 (1987-08-27) * page 3, line 58 - line 68 * * figure 1 *	1,2,6	
A	US 3 106 855 A (ARTUR TIETZE) 15 October 1963 (1963-10-15) * figure 1 *	1	
A	DE 887 457 C (ALBRECHT MAURER BAD HOMBURG V) 24 August 1953 (1953-08-24) * figures 1,2 *	1	
D,A	WO 94 21941 A (ZAHNRADFABRIK FRIEDRICHSHAFEN ;KUHN WALTER (DE); HERTER HARTMUT (D) 29 September 1994 (1994-09-29) * figure 1 *	1	<div>TECHNICAL FIELDS SEARCHED (Int.Cl.7)</div> <div>F16H</div>
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 19 June 2002	Examiner Wilson, M
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04001)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 10 8291

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-06-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9415121	A	07-07-1994	WO 9415121 A1	07-07-1994
DE 3703245	A	27-08-1987	DE 3703245 A1	27-08-1987
US 3106855	A	15-10-1963	NONE	
DE 887457	C	24-08-1953	NONE	
WO 9421941	A	29-09-1994	DE 4308761 A1	22-09-1994
			AT 153742 T	15-06-1997
			DE 59402919 D1	03-07-1997
			WO 9421941 A1	29-09-1994
			EP 0688408 A1	27-12-1995
			US 5643131 A	01-07-1997